NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

SCHOOL OF PHYSICAL AND MATHEMATICAL SCIENCES

DEPARTMENT OF GEOSCIENCES
BOX 5966 ZIP 27607

Quarterly Progress Report

September 1974 - November 1974

Investigation Title: Utilization of EREP Data in Geological Evaluation Regional Planning, Forest Management, and Water Management in North Carolina

EREP Investigation No.: 018

Contract No.: NAS9-13321

Principal Investigator: Charles W. Welby

Date: December 13, 1974

NASA Technical Monitor: Mr. James C. Derington
Code EF 33
Marshall Space Flight Center
NASA
Marshall Space Flight Center, Alabama 35812

During the September - November quarter two studies of the SKYLAB imagery were started. The first is a study of the usefulness of the imagery for vegetation and crop mapping in a part of northeastern North Carolina. Evaluation of frames 29 and 30 of rolls 25, 26, 27, 28, 29, and 30 is being made. Much of the area was cloud covered at the time of the satellite pass. However, some general conclusions can be listed at this time. Standard airphoto techniques along with ground checking were employed.

Three test or training sites were chosen for study: a salt marsh, a maritime forest, and an area of agriculture. Then mapping of other areas which contained these three types of cover was undertaken. It was found that salt marsh and crop areas could be correctly identified with about 80% accuracy; maritime forests could be identified correctly with an accuracy of about 70%, the lower accuracy being related to a greater species diversity in the maritime forests.

A second part of this investigation is construction of a vegetation map of parts of Perquimans and Pasquotank Counties. Groundtruth data has been obtained with the assistance of residents of the area. Based upon a preliminary evaluation of the work to date, this vegetative map is more accurate than available published material.

The second study is a preliminary evaluation of the SKYLAB imagery for land use mapping in the Piedmont region of North Carolina. Four types of imagery are being evaluated: 70mm color, 70mm color infrared, and color composites projected from the multispectral black and white 70mm transparencies in a color additive viewer, and the original color transparencies from the Earth Terrain Camera (S190B). The test site includes selected areas around Raleigh, and rural, suburban, and urban areas are being evaluated. A county road map at a scale of 1:126,720 (1 in. = 2 mi.) is being used as a base map.

Preliminary results indicate that the order of usefulness of the photography from most useful to least useful is S190B color, 70mm color, and 70mm color infrared. The study and evaluation of the miltispectral data has only begun.

Work has continued on evaluating the imagery as a tool for updating navigational charts of the inlets through the barrier islands. Also work is underway in an attempt to relate patterns of sedimentary features seen on the imagery with current flow patterns in the inlets. Visualization of the inlets as orifices seems to hold some promise for interpreting the flood-tidal and ebb-tidal delta patterns seen on the photographs.

A request for a no-cost contract extension was made in early November, and subsequently it became apparent that additional funding would be required. A

request for this has been submitted; the funding is chiefly to support two graduate assistants who will work mainly with imagery of the Piedmont, which has not yet been adequately evaluated.